

# Exercise and Diabetes

Children with diabetes should be encouraged to participate in regular physical activity. This includes participation in physical education classes, team sports, and other activities.

Benefits of exercise for the child or adolescent with diabetes include:

- Lowers blood glucose levels
- Improves cardiovascular conditioning
- Helps with weight loss or weight maintenance
- Increases flexibility, muscle strength, and endurance
- Improves self-image, overall attitude, and quality of life

Special Considerations for Children with Diabetes:

- Exercise may cause hypoglycemia (during exercise as well as up to 24 hours after exercise of long duration) so food and/or insulin may need to be adjusted.
- The child should test blood glucose before exercise and may need to test during exercise if the exercise is of long duration or high intensity, or the child exhibits symptoms of low blood glucose.
- The child should not exercise if blood glucose is  $<70$  or  $>240$  mg/dl and they have urine ketones.

- The child may exercise if low blood sugar is treated successfully.
- The child may exercise if their blood glucose is  $>240$  mg/dl and they DO NOT have urine ketones.
- The child should carry or have easy access to a food or fluid containing simple sugar (e.g. glucose tabs).
- The child should always wear diabetes identification in a visible location.



# Additional Food for Activity

The blood sugar should be checked according to the student's Individualized Health Plan and proper measures should be taken to keep the level in the appropriate range. The following chart illustrates actions that **might** be recommended by the students' health care provider to maintain a safe blood sugar during physical activity

Type of Activity	If Blood Sugar prior to activity is:	Then eat the following before activity:
<b>Light Intensity or Short Duration</b> (Examples: walking, leisurely biking - activity lasting less than 30 minutes)	<100	15 gm of carbohydrate
	>100	No extra food needed
<b>Moderate Intensity and Duration</b> (Examples: tennis, jogging, golfing, - activity lasting 30 minutes to an hour)	<100	25-50 gm of carbohydrate before exercise
	100-180	15 gm of carbohydrate
	180-240*	No extra food needed
<b>Strenuous Activity</b> (Examples: hockey, basketball, swimming, soccer, roller blading – activity lasting 60 minutes or more)	<100	50 gm of carbohydrate
	100-180	25-50 gm of carbohydrate
	180-240*	15 gm of carbohydrate

\*If blood sugar is >240, check for the presence of ketones in the urine. For more details on ketones, see page 92.

Snack Suggestions		
<b>15 grams Carbohydrate:</b> 1-4 oz juice box 1 cup Gatorade 1 apple or orange 1 small box raisins 6 saltine crackers 1 cup light yogurt ¾ cup dry unsweetened cereal 1 slice bread	<b>30 grams Carbohydrate:</b> 1 cereal bar 1-8 oz juice box 2 slices bread 1 small bagel	<b>45-50 grams carbohydrate:</b> 1 cup Gatorade plus 1 cereal bar 1 medium banana plus one small bagel

Adapted from: Department of Health and Senior Services, *Missouri Diet Manual*, 9<sup>th</sup> Edition, 2003. "Diabetes in Children A Resource Guide for School Personnel", 2002, Illinois Department of Human Services.

<http://www.iasn.org/diabetes.pdf>

# Exercise Safety Tips

Because exercise affects the way glucose (sugar) is used in your body, people with diabetes who take insulin need to take some precautions when they exercise. These safety measures will help to prevent low blood sugar reactions.

Guidelines to follow during exercise:

1. PE classes should ideally be scheduled after a meal (Breakfast or Lunch) to prevent low blood sugar.
2. **DO NOT** exercise when blood sugar levels are low, unless treated successfully.
3. **DO NOT** exercise if your blood sugar is  $>240$  mg/dl and you have ketones. If you have a blood sugar  $>240$  mg/dl but **DO NOT** have ketones, exercise with caution.
4. Watch for signs of low blood sugar during exercise. If you feel them, **STOP** the activity, **EAT** some fast-acting sugar, and **TELL** an adult.
5. To decrease the chances of having a low blood sugar, it is best to exercise  $\frac{1}{2}$  to 1 hour after a meal or snack.
6. It is important to drink lots of fluids, especially water, during long periods of exercise.
7. Avoid giving insulin into muscles you will be using during exercise to prevent the insulin from working too fast. This will help reduce the chance of a low blood sugar reaction.
8. It is also important to eat enough carbohydrates during the hours after exercise to prevent low blood sugar reactions later on.  
**NOTE:** The effect of exercise may last up to 24 hours after exercise and varies from person to person.
9. Carry some simple sugar with you in case of a low blood sugar.
10. Always wear diabetes identification in a visible location.

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| <ul style="list-style-type: none"><li>11. It is best to exercise with at least one other person.</li><li>12. Be sure to tell friends, coaches, teachers, and/or other people of the possibility of low blood sugar during exercise.</li><li>13. Be sure to instruct others about recognizing and treating low blood sugar.</li></ul> | <ul style="list-style-type: none"><li>14. Wear the right shoes and clothing for the weather and type of exercise you are doing.</li><li>15. Take care of any injuries immediately, especially foot injuries.</li></ul> |
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Adapted from: “Diabetes Management in the School Setting”, 1998, Missouri Association of School Nurses.



# Activity Pyramid for Kids

**Have FUN and be active each week  
by trying some of these activities...**

With your family

- go biking
- take a walk together
- play at the park
- have a “turn-off-the-TV-day”

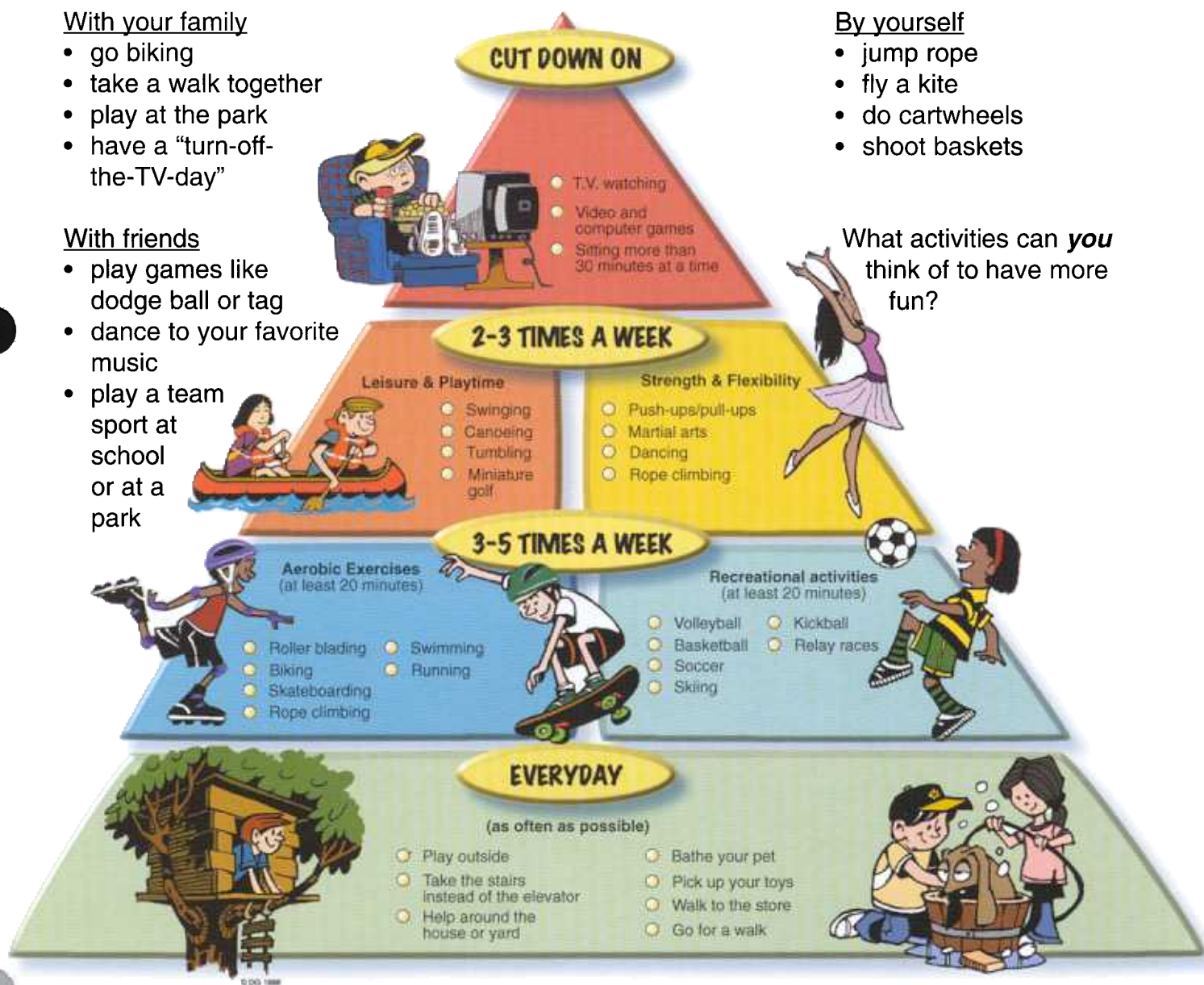
With friends

- play games like dodge ball or tag
- dance to your favorite music
- play a team sport at school or at a park

By yourself

- jump rope
- fly a kite
- do cartwheels
- shoot baskets

What activities can **you** think of to have more fun?



# My Own Activity Pyramid

## Hey, kids!

This is your own personal physical activity pyramid. List your physical activities for a week.

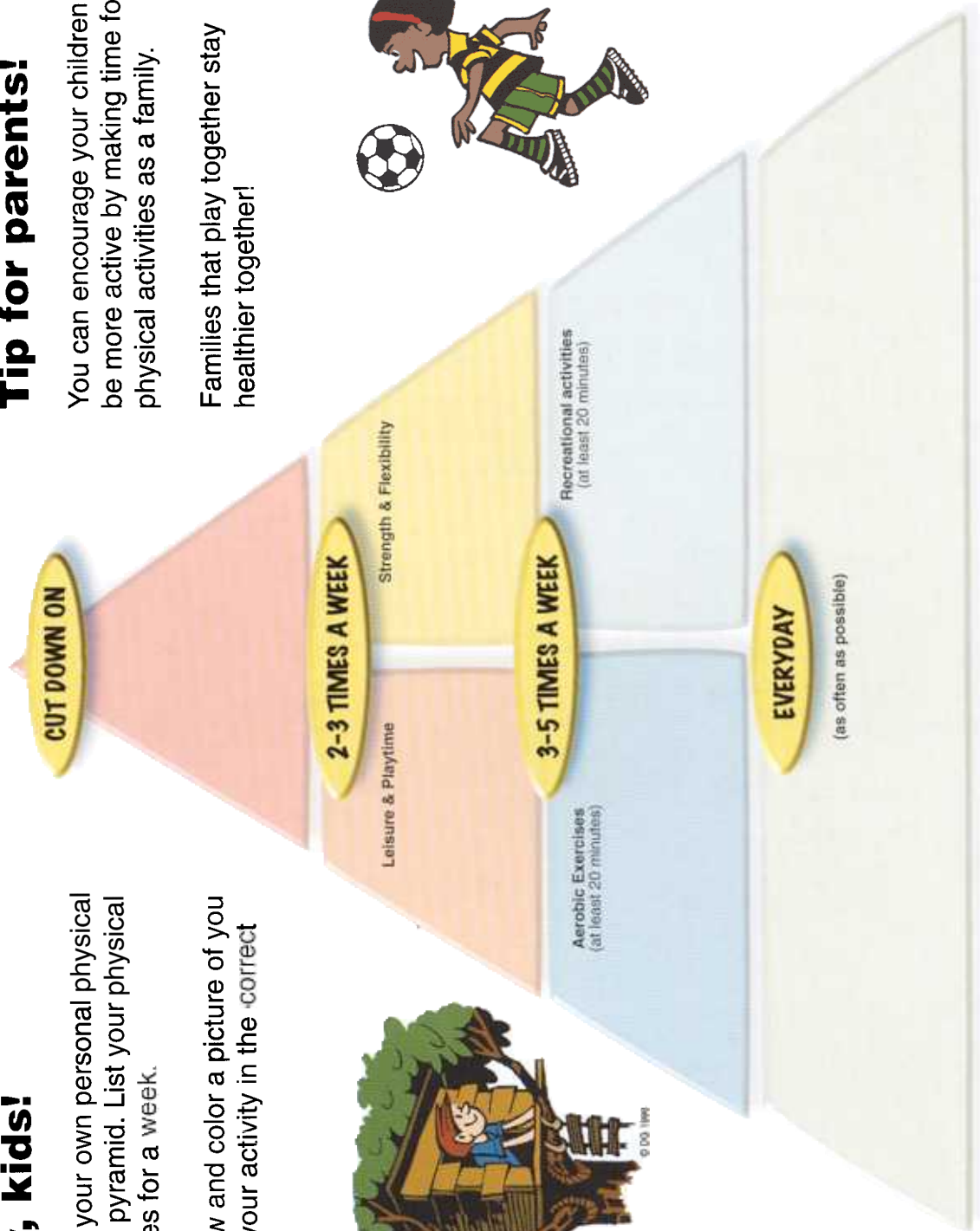
Or draw and color a picture of you doing your activity in the correct space.



## Tip for parents!

You can encourage your children to be more active by making time for physical activities as a family.

Families that play together stay healthier together!



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